

**Claims**

1. A vacuum pump comprising:
  - a pumping mechanism;
  - a drive shaft for driving the pumping mechanism;
  - a gear box connected to the drive shaft for rotating the drive shaft; and
  - pressure control means defining a path to allow fluid to flow from the pumping mechanism to the gear box to reduce the pressure difference therebetween, and, located in said path, a reservoir for collecting oil passing along the drive shaft from the gear box towards the pumping mechanism so that, in use, pressurised fluid flowing from the pumping mechanism towards the gear box urges oil collected in the reservoir towards the gear box.
2. A vacuum pump according to claim 1, wherein the pressure control means, comprises one or more restrictions cooperating with the rotating shaft.
3. A vacuum pump according to claim 2, wherein the one or more restrictions define one or more chambers located along the length of the shaft.
4. A vacuum pump according to claim 3, wherein the one or more restrictions define a first chamber proximate the pumping mechanism and a second chamber proximate the gear box.
5. A vacuum pump according to any preceding claim, wherein the pressure control means define a second path to allow fluid to flow from the gear box to the pumping mechanism to reduce the pressure difference therebetween.
6. A vacuum pump according to claim 5, wherein the second path is defined, in part, by a bore within the drive shaft.

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7. A vacuum pump according to claim 6 wherein the bore has a fluid inlet proximate the gear box and a fluid outlet proximate a said chamber.
8. A vacuum pump according to any preceding claim, wherein a non-return valve is located in the first mentioned path between the oil reservoir and the gear box, the valve being arranged to be opened by pressurised fluid flowing from the pumping mechanism towards the gear box.
9. A vacuum pump according to any preceding claim, wherein at least part of the or each path is defined by a conduit extending between the pumping mechanism and the gear box and comprising a filter for removing particulates from the fluid passing therethrough.